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ABSTRACT

To date, the constructive motivation hypothesis has generally been limited to educational achievement as an outcome variable, and few studies have been specifically designed to investigate student satisfaction outcomes. To measure student preferences for course structure and difficulty level and student perceptions of instructors' orientation toward students, 16 sections of freshmen (N=75) in a college course were tested using the Course Structure Inventory (CSI). An Attribute-Treatment Interaction analysis used student preferences and perceptions as independent variables and satisfaction and achievement as dependent variables. Significant interactions in the results indicated that students were least satisfied, yet achieved best, if they preferred low difficulty instruction and perceived instructors as low in student orientation. Results support the hypothesis that satisfaction and achievement outcomes conflict in studies comparing high and low structure instruction. (Author/JAC)

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# Satisfaction and Achievement: Antagonists in ATI Research on Classroom Structure

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In reviewing the Attribute-Treatment Interaction literature, Cronbach and Snow (1977) and Snow (1976) develop the constructive motivation hypothesis to explain some of the consistencies in ATI research. Briefly, this hypothesis suggests that certain students will show greater achievement in educational treatments which provide freedom rather than structure. Evidence for the constructive motivation hypothesis stems from a variety of treatments such as instructor directiveness (Domino, 1968; 1971); teacher structure and student participation (Peterson, 1977; 1979); encouragement of student participation (McKeachie, 1961); independent study (Bigelow & Egbert, 1968); filmed vs. live instruction (Snow, 1965); teacher spontaneity (Heil, Powell & Feifer, cited in Cronbach and Snow, 1977); teacher centered vs. student centered instruction (Porteus, cited in Snow, 1976); and contract-grading (Daniels & Stevens, 1976). To date, the constructive motivation hypothesis has generally been limited to educational achievement as an outcome variable, and few studies have been specifically designed to investigate student satisfaction outcomes.

Strom and Hocevar (1980) suggest that student attributes will interact with degree of course structure in the prediction of satisfaction as well as in the prediction of achievement. In other words, attitude toward course structure will depend on selected student attributes. In order to distinguish this hypothesis from the constructive motivation hypothesis, it is called the structural affect hypothesis. To date there have been few empirical examinations of the structural affect hypothesis. One exception is Strom and Hocevar's (1980) finding that independent students are more likely to prefer low structure instruction. This finding is consonant with research studies that show the most consistent support for the constructive motivation hypothesis. For example, in four ATI studies involving locus of control

(Daniels & Stevens, 1976; Peterson, 1977, 1979; Strom & Hocevar, 1980), internals have shown greater achievement in less structured treatments. Similarly, in ATI research on a locus of control-related construct, dominance-submissiveness, McKeachie, et al. (1968), found dominant students achieved better in less structured treatments.

Strom and Hocevar (1980) attempt an explanation of this consistency by suggesting that internals and dominant students achieve more in less structured treatments because they enjoy them. Specifically, a highly structured course frustrates students who want to act independently in controlling their environment (i.e. internals and high dominants), while externals and more submissive students excel in a structured course. On this basis, one would predict that internal and dominant students would show greater satisfaction in a less structured treatment. While this rationale is intuitively appealing, it is not without empirical and theoretical opposition. For example, in a recent correlational study, Strom and Hocevar (1982) measure internal and dominant students' generalized disposition toward a variety of factors associated with course structure. Their finding is that these students prefer more structured courses, even though the previous research findings suggest they will achieve less well in these courses. Along these same lines, Clark (1980) hypothesizes that an antagonism exists between achievement and satisfaction outcomes in studies comparing high and low structure treatments. Thus students who achieve better in high structure treatments actually are more satisfied in low structure treatments.

The current support for Clark's (1980) hypothesis consists mainly of separately conducted ATI studies which show opposing interactions for the prediction of achievement outcomes and for the prediction of satisfaction outcomes. The current study is intended to investigate the validity of Clark's hypothesis by utilizing an ATI design to examine achievement and satisfaction outcomes simultaneously.

The basic intent of the current study is to measure student preference for course structure as an attribute variable, to measure student perceptions of course structure as a "treatment" variable, and to measure student achievement and satisfaction as outcome variables. This permits comparison of the attribute-treatment interactions predicting achievement with those predicting satisfaction using the same subjects in the same course. It is hypothesized that significant interactions will be found supporting both the constructive motivation hypothesis and the structural affect hypothesis. It is further hypothesized that the interactions predicting achievement and satisfaction will be in opposition, thus supporting Clark's (1980) antagonism hypothesis.

The present study utilized the Course Structure Inventory (CSI) (Hocevar, Strom, & Zimmer; 1981) as a measure of student preference for course structure. That instrument was developed and validated to provide a measure of generalized student disposition toward a variety of factors associated with course structure. In this sense, the CSI avoids a problem with prior ATI studies, in which course structure is measured through student reaction to narrowly defined manipulations of only certain aspects of structure, while other aspects of structure are permitted to vary.

In addition to measuring preference for course structure, the CSI yields a measure of a related variable, preference for course difficulty. To date, attitude toward course structure and attitude toward course difficulty have typically been confounded. However, the CSI subscales of attitude toward course structure (ACS) and attitude toward course difficulty (ATD) have been shown to be conceptually distinct (Hocevar, Strom & Zimmer, 1981). Thus, a second purpose of the present study is to investigate ATI's in which ATD measures interact with student perceptions of treatment in predicting student achievement and satisfaction.

The CSI also has a second usage in the current study: that of measuring student perceptions of the structure of their course. Through use of a different set of instructions in a second administration, the CSI yields a measure of student perceptions of the degree to which instructors are student oriented. Student orientation is defined as positive if an instructor is perceived as having an interest in students, a positive regard for student interests, and a concern for student achievement and satisfaction. Student orientation is defined as negative if these characteristics are perceived as lacking. It should be clear that student perceptions of student orientation are useful indices of treatment in an ATI study. Porteus (cited in Snow, 1976) and Walberg and Anderson (1968) suggest the advantage of using student perceptions in this fashion in their research on ATI's. In its usage as a measure of student orientation, the CSI is renamed the Student Orientation Inventory (SOI) for the sake of clarity.

## Method

Seventy-five college freshmen in sixteen sections of an introductory college humanities course were administered the CSI during the first week of the fall term, 1981. On this inventory, students are asked to indicate their preference for high or low structure course characteristics on a five-point, like-dislike scale. The development, rationale, reliability, content validity, discriminant validity, and construct validity of the CSI are described in Hocevar, Strom and Zimmer (1981). The inventory's two subscales, attitude toward course structure (ACS) and attitude toward course difficulty (ATD) consist of 36 and 30 items respectively. A sample list of items for each subscale follows:

ACS

(1) Assignments that permit student choice
(2) Exams that cover factual material
(3) Flexible due dates
(4) Lectures that cover the text
(5) Pass-fail grading
(6) Required attendance
(7) Frequent student-student interaction
(8) Well-organized lectures

ATD

(1) Study questions for exams
(2) Heavy reading assignments
(3) Verbal summaries at the end of lecture
(4) Exams which go beyond lectures and text
(5) Extra credit assignments
(6) Surprise quizzes
(7) Examples during lectures
(8) Theoretical rather than applied course content

Approximately one week before the end of the ten-week fall term, the same students were administered the Student Orientation Inventory (SOI), along with an attitude-toward-instruction questionnaire developed, validated, and researched extensively by Marsh (cf. Marsh and Overall, 1979). The SOI consists of CSI items with a set of different instructions. Students are asked to characterize their perceptions of the degree of presence or absence of instructor and course characteristics that indicate a positive or negative student orientation. The SOI consists of 60 items to be rated on a five-point, present-absent scale. Example items on the SOI follow:

1. Enthusiastic instructors
2. Flexible instructors
3. Close instructor-student relationship
4. Immediate feedback on exams
5. Individualized assignments
6. Very friendly instructors
7. Variety in class activities
8. Written comments on papers

The Marsh attitude-toward-instruction questionnaire was used as a dependent measure of satisfaction. It consists of thirty-eight items, requiring students to rate their own learning, instructor enthusiasm, class organization, classroom interaction, instructor rapport, course breadth, examination and assignment quality, and overall course characteristics. Ratings are made on a five-point, poor-good scale. Total scores on this instrument were used in the final data analysis.

Fifty students responded to the SOI and to the Marsh questionnaire. Course grades for these students were obtained from their instructors.

Because the students were relatively evenly distributed among sixteen different sections of the humanities course and because each section was taught by a different instructor, there was concern that differential practices in grading might obscure the hypothesized interaction results for achievement. It was felt that an individual's achievement-rank-within-section might be a more objective measure than course grade, since that rank is unaffected by instructors' practices of grading consistently high or low. As a result grades for all students in all sections were obtained and used to determine the section-rank for each student participating in the study. Percentile ranks were computed for these students and were used as the dependent measure of achievement in the final data anlayses.

Median splits were used to divide students into high- and low-preference groups on independent measures of structure (ACS) and difficulty (ATD). Instructors were similarly divided on the independent measure of student orientation (SOI). Four 2x2 analyses of variance sought main effects and interaction effects of 1) ACS and SOI in predicting achievement, 2) ATD and SOI in predicting achievement, 3) ACS and SOI in predicting satisfaction, and 4) ATD and SOI in predicting satisfaction. Because main effects of the analyses are not the focus of the current research, they are not discussed here.

Analyses 1) and 3) showed no interaction effects between structure and student orientation in predicting outcome variables. However, in analysis 2) a significant ($p < .05$) disordinal interaction between preference for difficulty and instructor's student orientation was found in predicting student achievement. Table I shows the nature of this interaction and Figure I shows a graphic representation of the interaction. For students who preferred non-difficult courses, achievement was greatest with instructors who were negative on student orientation. Conversely, for students who preferred

difficult courses, achievement was greatest with instructors who were positive on student orientation. Student percentile ranks in Table I do not average to the expected 50% level, apparently because higher-ranked students were more likely to complete all data collection instruments than were lower-ranked students.

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Insert Table I and Figure I about here

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Analysis 4) showed no significant interaction when conventional analysis of variance techniques were used. A trend toward ordinal interaction was noted in this analysis, however. In order to explore this trend, data were further analyzed through the more powerful statistical method of multiple regression. Preference for difficulty and student orientation perceptions were regressed on student satisfaction. A product variable was included for the interaction between preference for difficulty and student orientation perceptions. This method of analysis showed the ordinal interaction to be significant, with the product interaction term contributing significantly ($p < .05$) to the variance of the dependent measure of satisfaction. The ordinal interaction is shown in a 2x2 analysis of variance format in Table II and is graphically depicted in Figure II. Specifically, the interaction shows that the lowest satisfaction ratings were given by students who preferred non-difficult courses to instructors who were negative on student orientation. The apparent main effect, showing that all students are more satisfied by student-oriented instructors, is significant ($p < .05$) in the initial analysis of variance.

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Insert Table II and Figure II about here

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Taken together, the satisfaction and achievement results provide support for Clark's (1980) contention that students like the instructors from whom they learn the least. In this case, students who prefer easy courses are less satisfied with instructors who were not student oriented. However, these students got better grades in classes taught by this type of instructor! The importance of this finding is obvious. For example, numerous educational treatments and theories are based on the assumption that students will choose the method of instruction that optimizes their learning. The present results raise a question about this assumption. Another area of implication is that of student evaluation of instruction. It is clear that advocates of the use of student evaluation instruments believe that students are more satisfied with instruction that leads to greater learning. Again, the present results do not support such an assumption.

As a final note, the size of sample in the current study is relatively small, consisting of fifty students in the final analysis. It should be pointed out, however, that the method of data analysis used here dictates against finding significant results in small samples. Put another way, the differences located in the current analysis had to be very large in order to be found significant in a sample of this size. In this respect, sample size is not a problem in the current study.

## Table I

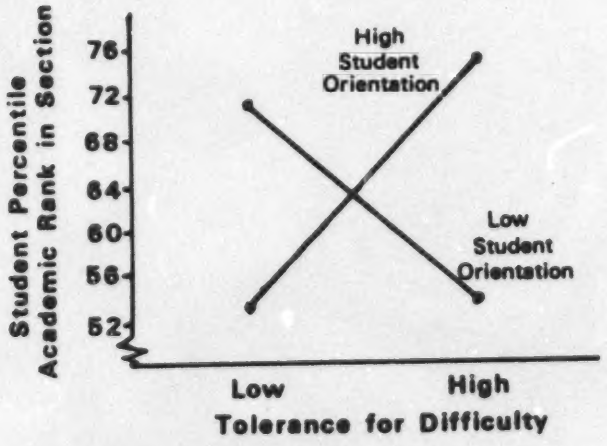
**Mean Percentile Student Academic Rank in Section by Instructors Degree of Student Orientation and by Student Tolerance for Course Difficulty***

| | | Student Orientation | |
|---|---|---|---|
| | | Low | High |
| Tolerance for Difficulty | High | 53.8 | 75.7 |
| | Low | 71.7 | 52.7 |

**2x2 ANOVA shows the disordinal interaction effect to be significant [$p<.05$]. Graph of interaction is shown in Figure I.*

## Figure I

**Graphic Representation of Table I Interaction**






## Table II

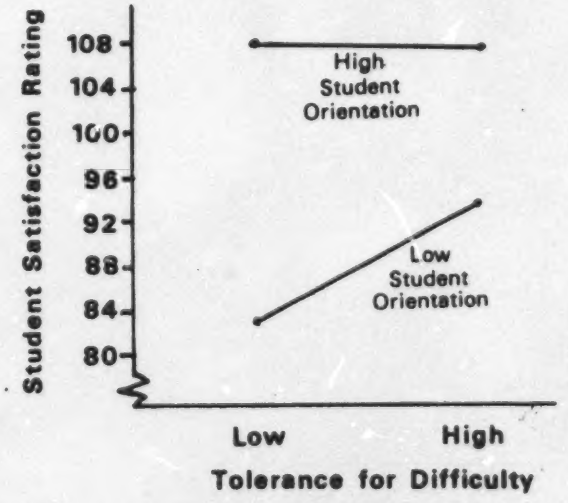
**Mean Student Satisfaction Ratings by Instructors Degree of Student Orientation and by Student Tolerance for Course Difficulty***

| | | Student Orientation | |
|---|---|---|---|
| | | Low | High |
| Tolerance for Difficulty | High | 92.6 | 107.4 |
| | Low | 82.9 | 107.2 |

**2x2 ANOVA shows the main effect of student orientation to be significant [$p<.05$], while the ordinal interaction effect is not. however, a more powerful Multiple Regression Analysis shows the ordinal interaction effect to be significant [$p<.05$].*

## Figure II

**Graphic Representation of Table II Interaction**



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